

CLAIMS

What is claimed is:

1. An enhanced visibility composition for implantation into hard tissue comprising:
- 5 a hard tissue implant material; and
- radiopaque particles mixed in said hard tissue implant material, said radiopaque particles having a particle size between about 350 $\mu$  and 2200 $\mu$ .
2. The enhanced visibility composition of claim 1, wherein said hard tissue implant and said radiopaque particles are formed in a slurry.
3. The enhanced visibility composition of claim 1, wherein said hard tissue implant material comprises polymethyl methacrylate.
4. The enhanced visibility composition of claim 1, wherein said hard tissue implant material comprises hydroxyapatite.
5. The enhanced visibility composition of claim 1, wherein said hard tissue implant material comprises calcium phosphates.
- 15 6. The enhanced visibility composition of claim 1, wherein said hard tissue implant material comprises calcium sulfates.
7. The enhanced visibility composition of claim 1, wherein said hard tissue implant material comprises at least one of the materials selected from the group consisting of demineralized bone particles and mineralized bone particles.
- 20 8. The enhanced visibility composition of claim 1, wherein said hard tissue implant material comprises at least one of the materials selected from the group consisting of polyglycolic acid compounds and polylactic acid compounds
9. The enhanced visibility composition of claim 1, wherein said hard tissue implant material comprises at least one of the materials selected from the group consisting of collagen and collagen derivatives.
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10. The enhanced visibility composition of claim 1, wherein said hard tissue implant material comprises at least one of the materials selected from the group consisting of chitin and chitosan.

11. The enhanced visibility composition of claim 1, wherein said hard tissue implant material comprises at least one of the materials selected from the group consisting of bioglasses including oxides of silicon, sodium, calcium and phosphorous and combinations thereof.

12. The enhanced visibility composition of claim 1, wherein said radiopaque particles have a particle size between about  $450\mu$  and  $2200\mu$ .

13. The enhanced visibility composition of claim 1, wherein said radiopaque particles have a particle size between about  $570\mu$  and  $2200\mu$ .

14. The enhanced visibility composition of claim 1, wherein said radiopaque particles have a particle size between about  $350\mu$  and  $1600\mu$ .

15. The enhanced visibility composition of claim 9, wherein said radiopaque particles have a particle size between about  $350\mu$  and  $1150\mu$ .

16. The enhanced visibility composition of claim 15, wherein said radiopaque particles have a particle size between about  $450\mu$  and  $1150\mu$ .

17. The enhanced visibility composition of claim 1, wherein said radiopaque particles have a particle size between about  $570\mu$  and  $1150\mu$ .

18. The enhanced visibility composition of claim 14, wherein said radiopaque particles have a particle size between about  $450\mu$  and  $1600\mu$ .

19. The enhanced visibility composition of claim 1, further comprising:  
additional radiopaque particles mixed in said hard tissue implant material, said additional radiopaque particles having a particle size between about  $120\mu$  and  $350\mu$ .

20. The enhanced visibility composition of claim 1, wherein said additional radiopaque particles have a particle size between about  $120\mu$  and  $250\mu$ .

21. The enhanced visibility composition of claim 1, wherein said radiopaque particles comprise barium sulfate.

22. The enhanced visibility composition of claim 1, wherein said radiopaque particles comprise tungsten.

23. The enhanced visibility composition of claim 1, wherein said radiopaque particles comprise tantalum.

24. The enhanced visibility composition of claim 19, wherein said additional radiopaque particles comprise barium sulfate.

25. The enhanced visibility composition of claim 19, wherein said additional radiopaque particles comprise tungsten.

26. The enhanced visibility composition of claim 19, wherein said additional radiopaque particles comprise tantalum.

27. A composition for percutaneous vertebroplasty comprising a slurry of biocompatible implant material and radiopaque markers having a particle size of between about 120 $\mu$  and 2200 $\mu$ .

28. The composition of claim 27, wherein said biocompatible implant material comprises polymethyl methacrylate.

29. The composition of claim 27 wherein said markers have a particle size between about 350 $\mu$  and 2000 $\mu$ .

30. The composition of claim 29 wherein said markers have a particle size between about 450 $\mu$  and 1600 $\mu$ .

31. The composition of claim 30, further comprising contrast particles, wherein said contrast particles have a particle size between about 120 $\mu$  and 350 $\mu$ .

32. The composition of claim 31 wherein said markers have a particle size between about 570 $\mu$  and 1150 $\mu$ .

33. An injectable composition comprising:  
a biocompatible matrix; and

radiopaque particles mixed within said biocompatible matrix, said radiopaque particles having a particle size between about 120 $\mu$  and 2200 $\mu$ .

34. The injectable composition of claim 33, wherein said biocompatible matrix and said radiopaque particles form a slurry.

5 35. The injectable composition of claim 33, wherein the mixture of said biocompatible matrix and said radiopaque particles forms a hard tissue implant material.

36. The injectable composition of claim 33, wherein said radiopaque particles have a particle size between about 350 $\mu$  and 2200 $\mu$ .

10 *Sub B2* 37. The injectable composition of claim 36, further comprising: contrast particles having a particle size between about 120 $\mu$  and 350 $\mu$ .

38. The injectable composition of claim 36, wherein said radiopaque particles having a particle size between about 450 $\mu$  and 1600 $\mu$ .

15 39. The injectable composition of claim 38, wherein said radiopaque particles having a particle size between about 570 $\mu$  and 1150 $\mu$ .

*Sub D7* 40. An enhanced visibility composition comprising:

a flowable matrix; and

radiopaque particles in said flowable matrix, said radiopaque particles being of a size and concentration so as to be individually visible under medical fluoroscopy.

20 41. The enhanced visibility composition of claim 40, wherein said radiopaque particles have a size between about 120 $\mu$  and 2200 $\mu$ .

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